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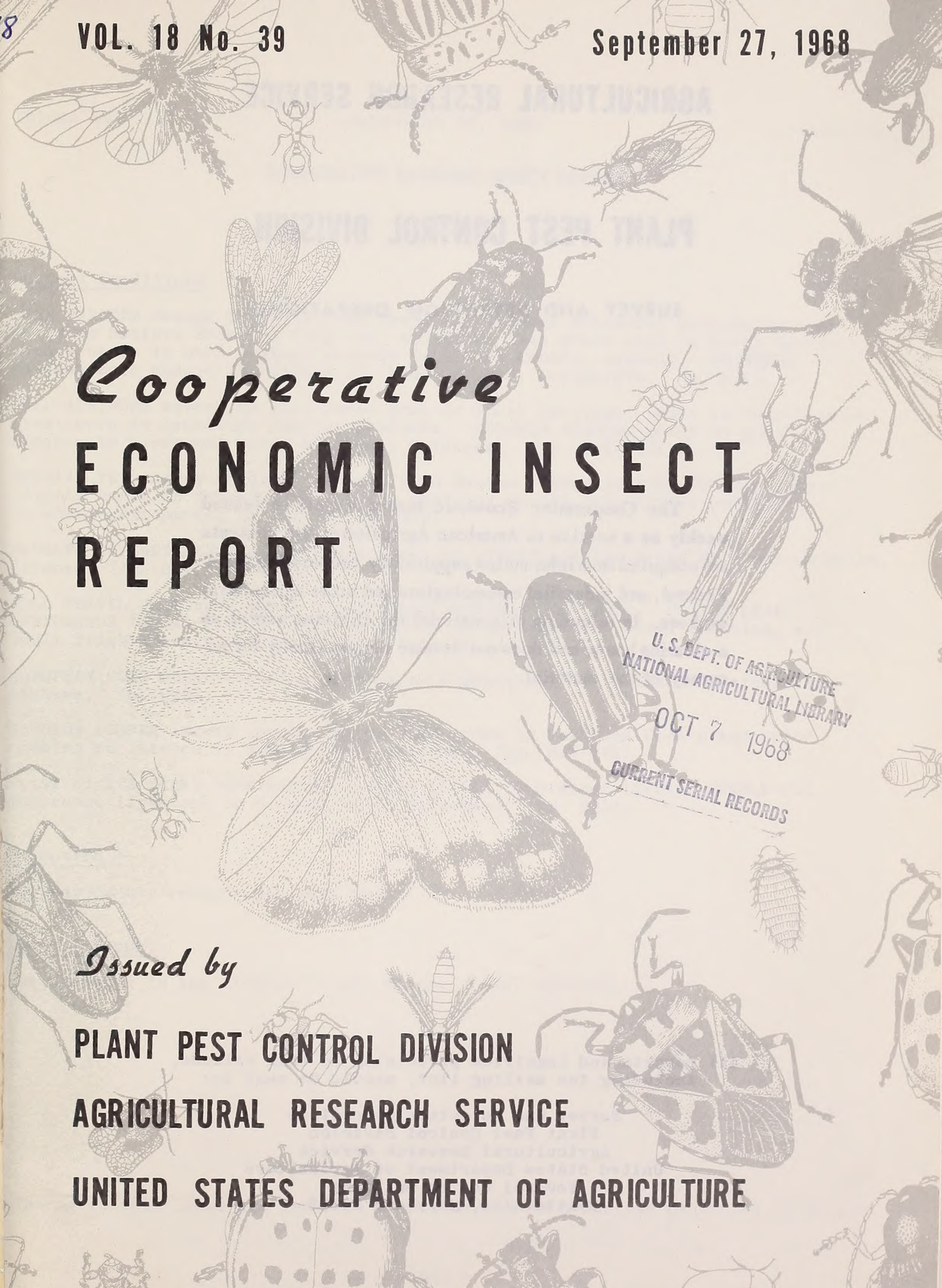

# Cooperative
# ECONOMIC INSECT REPORT

*Issued by*

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

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# AGRICULTURAL RESEARCH SERVICE

# PLANT PEST CONTROL DIVISION

## SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 18 September 27, 1968 Number 39

# COOPERATIVE ECONOMIC INSECT REPORT

## HIGHLIGHTS

### Current Conditions

CORN EARWORM damage heavy on lima beans in southern Delaware; problem on snap beans on Eastern Shore of Virginia; severe on fall sweet corn in South Carolina; damage heavy in much soybean acreage in Elmore County, Alabama. GREENBUG causing much damage to sorghum in Fresno County, California. (p. 917).

FALL ARMYWORM severe on fall sweet corn in South Carolina; heavy in late-planted sweet corn in Lancaster County, Nebraska. SORGHUM WEBWORM heavy on grain sorghum in Mayes and Craig Counties, Oklahoma. (pp. 917-918).

HESSIAN FLY survey results reported from Kansas. PALE WESTERN CUTWORM adult flights heavy in Nebraska Panhandle; damaging larval populations possible in wheat next spring in State. (p. 919).

ALFALFA CATERPILLAR adult flights heavy in alfalfa in Pinal and Maricopa Counties, Arizona. (p. 920).

BOLL WEEVIL continues heavy in northern Alabama. (p. 921). COTTON LEAF PERFORATOR larval damage heavy on cotton in Maricopa and Pinal Counties, and adult flights heavy in Yuma County, Arizona. (p. 922).

EUROPEAN CORN BORER becoming problem in pimento pepper fields in northeastern Alabama. (p. 922).

CABBAGE LOOPER larvae increasing on cole crops in Maricopa County and major problem on lettuce in Yuma County, Arizona. (pp. 922-923).

Total of 378 SCREW-WORM cases reported in U.S. September 15-21. STABLE FLY severe on livestock in 4 counties in Wisconsin. (p. 925).

### Detection

For new county records see page 929.

### Special Report

The Greenbug in the Atlantic Coast States. (pp. 930-938).

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Reports in this issue are for week ending September 20 unless otherwise indicated.

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## WEATHER OF THE WEEK ENDING SEPTEMBER 23

HIGHLIGHTS: Early season cold in Northwest with heavy snowfall in northern Rockies. Frequent thunderstorms with scattered unusually heavy downpours in midcontinent. Mostly fair, sunny weather in East.

PRECIPITATION: With a slow eastward moving cold front in the midcontinent area the first part of the period, moderate to heavy rains and thunderstorms were widespread from the Mississippi Valley to the Appalachians on the 16th and 17th, continuing in the upper Mississippi Valley and Great Lakes area and along the western slopes of the Appalachians on the 18th and 19th. Warren, Arkansas, measured over 5 inches in a 24-hour period ending on the morning of the 16th, and more than 4 inches in 12 hours were reported in eastern Kansas and Nebraska. On the 17th tornadoes caused some damage to Beeville, Texas, and Wiehaven Tennessee, and another tornado was reported near Cherokee, Iowa. High winds damaged homes and downed trees at Batesville, Arkansas, on the same date. A slow moving cold front entered the Pacific Northwest on the 17th and reached the Great Plains by the end of the week. Snow fell in the higher Rockies behind the midcontinent cold front and Leadville, Colorado, reported 3 inches on the ground on the morning of the 17th. On the 18th snowfall was reported down to 4,000 to 5,000 feet in Idaho and Montana. By the 20th a heavy snowstorm had developed in the northern Rockies and trees and utility lines were downed by wind and a foot of snow at Anaconda, Montana. On the morning of the 21st Cut Bank, Montana, reported 3 inches of snow on the ground and Helena 2 inches. On the last day of the period tornadoes were reported near Orange City, Hospers, and Alton, Iowa. Weekly precipitation totaled over 2 inches in much of the Mississippi Valley, along the north Pacific coast, and scattered spots in the northern Rockies. Little or none was reported east of the Appalachians from North Carolina to northern Maine and in the Far Southwest.

TEMPERATURE: The last week of the astronomical summer was much colder than normal in the West, about normal in the midcontinent area and South, and warmer than normal from the upper Mississippi Valley eastward. Generally rising temperatures in the Northeast during the week reached the middle and high 80's during the weekend. Temperatures were below normal most of the week in the West. Cold air moving in behind the midwestern cold front reduced temperatures to unusually low levels in the lower Great Plains about midweek. On the morning of the 18th El Paso, Texas, recorded an early season low of 45° and Fort Worth one of 51°. (Summary supplied by Environmental Data Service, ESSA.)

## SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

CORN EARWORM (Heliothis zea) - NEW JERSEY - Infestations still possible on lettuce despite recent cool weather. (Ins.-Dis. Newsltr.). DELAWARE - Larvae numerous, feeding injury heavy on lima bean pods in eastern Sussex County. (Burbutis). MARYLAND - Moth collections averaged less than 1 per night at blacklight trap in Centreville September 10-16. (U. Md., Ent. Dept.). VIRGINIA - Moths numerous in Accomack County; egg laying in progress on various hosts. Special problem on snap beans. (Hofmaster). SOUTH CAROLINA - This species and Spodoptera frugiperda (fall armyworm) severe on fall sweet corn; controls adequate where recommended. H. zea primary species on soybeans in nearly all counties except some in Piedmont area. New generation present in some counties; all stages noted in other counties. Dry weather in many areas reduced yield of beans. (Thomas, Sept. 18). ALABAMA - Larvae heavy, destroyed about 4-6 bushels of seed per acre in 250-acre soybean planting in Marengo County. Infestations spotted and lighter over much of county. Damage heavy in much acreage in Elmore County. Spotted damage in Colbert and Madison Counties; controls applied. (Miller et al.). Larvae light in pimento pepper planting on Sand Mountain; Ostrinia nubilalis (European corn borer) also present. (Parker et al.). MISSISSIPPI - Light in grain sorghum in Noxubee County. (Dinkins). WISCONSIN - Effects of earlier heavy flights noted in sweet corn; markedly affected production in some plants. (Wis. Ins. Sur.). MISSOURI - Ranged 1-10 per 10 heads on late dough-stage grain sorghum in southwest area. Larvae killed by fungus disease averaged 5-10 per 10 heads in same fields. (Craig, Thomas). KANSAS - Present in sorghum heads in most late fields in southeast and east-central districts. Larvae averaged 1-2 per head on 20-35 percent of heads in most fields. Averaged 5 per head on 90 percent of heads in one Linn County field; damage severe. Occasional larvae in alfalfa in southeast district. (Simpson).

CORN LEAF APHID (Rhopalosiphum maidis) - MARYLAND - Continues to decline on field corn in State. Light in ear husks and leaf sheaths in most late-maturing corn statewide. Parasitic wasps increasing. Field corn harvest underway in all sections. (U. Md., Ent. Dept.). KANSAS - Light, 15-50 per plant, in all sorghum examined in southeast and east-central districts; infestation ranged 10-25 percent in most cases. Aphids found behind leaf sheath. (Simpson).

GREENBUG (Schizaphis graminum (In broad sense))* - CALIFORNIA - Infestations continuing in and causing much damage to sorghum in Fresno County. Many fields maturing and being harvested. (Cal. Coop. Rpt.). OKLAHOMA - Ranged 5-100 per row foot in 4 volunteer wheatfields at Carnegie, Caddo County. (Okla. Coop. Sur.).

PAINTED LADY (Vanessa cardui) - ARKANSAS - Larvae on sunflower foliage in Lee and Cross Counties. Determined by E.P. Rouse. (Boyer).

POTATO LEAFHOPPER (Empoasca fabae) - WISCONSIN - Remains noneconomic on alfalfa, beans, and potatoes; seldom over 10 per sweep in marginal zone of alfalfa. (Wis. Ins. Sur., Sept. 13).

SPOTTED ALFALFA APHID (Therioaphis maculata) - SOUTH DAKOTA - Light, less than 10 per 100 sweeps, in alfalfa surveyed south of Ipswich, Edmunds County; west of Highmore, Hyde County; and southeast of Seneca, Faulk County. These are new county records. (Jones). KANSAS - Light, 5-25 per 10 sweeps, in most alfalfa checked in Woodson, Wilson, Montgomery, Allen, Neosho, Labette, Cherokee, Crawford, and Bourbon Counties. Ranged 100-300 per 10 sweeps in Linn and Miami Counties; up to 2,500 per 10 sweeps with severe damage in one Linn County field. (Simpson). OKLAHOMA - Ranged 15-200 per 10 sweeps on alfalfa checked in Tulsa, Wagoner, and Le Flore Counties. (Okla. Coop. Sur.). ARIZONA - Infested 4-year-old stand of Moapa alfalfa at Mesa, Maricopa County. Immediate treatment

* According to recent taxonomic studies by L.M. Russell. This aphid on sorghum appears to be this species.

recommended to prevent further spread. Determined by M.W. Nielson. (Ariz. Coop. Sur.). CALIFORNIA - This species and Acyrthosiphon pisum (pea aphid) heavy on Moapa alfalfa in Fresno, Fresno County. (Cal. Coop. Rpt.). OREGON - Ranged up to 50 per sweep in alfalfa near Hermiston, Umatilla County. Mainly apterae compared with mostly alates 2 weeks ago. Light in several alfalfa fields east of Boardman, Morrow County. None found in this area 2 weeks ago. (Westcott).

## CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - DELAWARE - Adults remain abundant, averaged 50+ per night in blacklight trap collections in western Sussex County. (Burbutis). MARYLAND - Moths averaged 23+ per night in blacklight collections at Centreville, Queen Annes County, September 10-16. (U. Md., Ent. Dept.). OHIO - Second-generation larvae heavy on corn in some widespread areas over State; some heavy damage to garden sweet corn reported. (Rose). WISCONSIN - Effects of earlier heavy flights noticeable in sweet corn; markedly affected production in some plants. (Wis. Ins. Sur.). KANSAS - Larvae averaged 1 per stalk on 15 percent of grain sorghum field in Linn County. No stalk breakage noted. (Simpson). COLORADO - Larval infestation 12-100 percent in corn in Roggen area, Weld County. Larvae 12-250 per 100 plants in 5 cornfields in isolated valley; appeared to be center of infestation. Light in some corn 6 and 8 miles west of this valley. (Hantsbarger, Johnson).

SOUTHWESTERN CORN BORER (Diatraea grandiosella) - TEXAS - Light on sorghum near Northfield, Motley County; lodging grain sorghum stalks. (Pallmeyer). ARIZONA - Averaged 1 per stalk on sorghum in Pinal County and 1 per 10 stalks in Queen Creek area, Maricopa County. (Ariz. Coop. Sur.).

SUGARCANE BORER (Diatraea saccharalis) - TEXAS - Damaged late-planted grain sorghum in Uvalde and Kinney Counties. (Neeb, Keller).

SORGHUM WEBWORM (Celama sorghiella) - MISSOURI - Ranged 5-670 (average 50) per 10 heads in dough-stage sorghum in southwest area. (Craig, Thomas). KANSAS - Light, 1-5 per head, in most late sorghum examined in southeast district. Averaged 30-60 per head on 35 percent of heads in Linn County sorghum field. (Simpson). OKLAHOMA - Ranged up to 40 per head on grain sorghum in Ottawa County; heavy in Craig and Mayes Counties; averaged 15 per head in Payne County; very light in Tulsa and Muskogee Counties. (Okla. Coop. Sur.).

FALL ARMYWORM (Spodoptera frugiperda) - NEBRASKA - Third instar to full-grown larvae heavy on 65 percent of plants in late-planted sweet corn in Lancaster County. (Keith).

WESTERN BEAN CUTWORM (Loxagrotis albicosta) - NEBRASKA - Larva on corn at Mead Experiment Station in Saunders County August 25 for a new county record. (Raun).

CORN ROOTWORMS (Diabrotica spp.) - WISCONSIN - D. longicornis adults still prevalent on corn in State; still feeding on corn tips. (Wis. Ins. Sur., Sept. 13). COLORADO - D. virgifera adults still active, 0-4 per plant, on corn in Weld County. (Johnson).

SORGHUM MIDGE (Contarinia sorghicola) - MISSISSIPPI - Moderate on grain sorghum in Noxubee County; controls applied. (Dinkins). OKLAHOMA - Damaged 15 percent of heads in grain sorghum checked in Payne County. (Okla. Coop. Sur.).

## SMALL GRAINS

HESSIAN FLY (Mayetiola destructor) - KANSAS - Survey completed August 30 in total of 366 wheatfields throughout State. Percent of fields and stems (average) infested by district: Northeast, 7 and 1.3; east-central, 12 and 0.5; southeast, 9.5 and 0.2; north-central, 29.5 and 2.9; central, 5 and 9.5; south-central, 7.6 and 0.3; northwest, 30 and 2.0; west-central, 8.3 and 0.2; southwest, 11 and 0.4. Substantial decrease noted in some districts compared with 1967. Bushel loss estimates by district: Northeast 15,700; east-central 7,960; southeast 6,910; north-central 162,720; central 36,760; south-central 79,040; northwest 97,120; west-central 12,870; southwest 43,400. Total loss for State, 462,480 bushels. (Somsen).

PALE WESTERN CUTWORM (Agrotis orthogonia) - NEBRASKA - Adult flights heavy in panhandle area. Damaging larval populations possible in wheat in spring of 1969. (Pruess).

A CRAMBID MOTH (Chilo loftini) - ARIZONA - Buildup begun in millet in Salt River Valley, Maricopa County; damage may be severe. (Ariz. Coop. Sur.).

## TURF, PASTURES, RANGELAND

A CRICKET (Anurogryllus muticus) - MARYLAND - Heavy in home lawn near California, St. Marys County, September 14. Collected by R. Letcher. Determined by A.B. Gurney. This is a new county record. (U. Md., Ent. Dept.).

SOUTHERN CHINCH BUG (Blissus insularis) - TEXAS - Heavy on St. Augustine grass at Paris, Lamar County. (Ware).

A BURROWING STINK BUG (Pangaeus bilineatus) - TEXAS - Damaging roots of St. Augustine grass at Corpus Christi, Nueces County. (Noland).

MEALYBUGS (Heterococcus spp.) - ARIZONA - Damaged Bermuda grass seed fields at Yuma, Yuma County; treatments applied to many fields. (Ariz. Coop. Sur.).

A LEAF ROLLER MOTH (Synnoma lynosyrana) - NEVADA - Larvae very heavy on rabbitbrush in railroad pass area on Eureka and White Pine County line. All branches on numerous plants webbed; defoliation heavy. (Bechtel, Martinelli).

BERMUDAGRASS MITE (Aceria neocynodonis) - CALIFORNIA - Heavy on Bermuda grass in Pleasanton, Alameda County. (Cal. Coop. Rpt.).

## FORAGE LEGUMES

GREEN CLOVERWORM (Plathypena scabra) - MISSOURI - Larvae averaged 60-75 per 10 sweeps in alfalfa in south-central area. Some spring-seeded fields completely defoliated; controls being applied. (Huggans, Munson). KANSAS - Light, 2-6 per 10 sweeps, in most alfalfa examined in southeast district; averaged 50-65 per 10 sweeps in Linn County field. (Simpson).

WESTERN YELLOW-STRIPED ARMYWORM (Prodenia praefica) - NEVADA - Larvae numerous in many alfalfa fields in Smith and Mason Valleys, Lyon County. Some damage in several fields; little additional damage expected since hay ready to cut. (Batchelder).

BEET ARMYWORM (Spodoptera exigua) - ARIZONA - All instars active in alfalfa, averaged 105 per 100 sweeps in Salt River Valley, Maricopa County. (Ariz. Coop. Sur.).

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Larvae 50 per 100 sweeps in alfalfa at Casa Grande, Pinal County. (Ariz. Coop. Sur.).

NOCTUID MOTHS - WISCONSIN - Spaelotis clandestina, Feltia ducens, F. herilis, Agrotis gladiaria, A. venerabilis, and Euxoa scandens moths numerous in blacklight trap at Hancock, Waushara County. This is one of areas with high cutworm infestation in alfalfa past spring. (Wis. Ins. Sur.).

ALFALFA CATERPILLAR (Colias eurytheme) - ARIZONA - Heavy flights noted in many alfalfa fields in Pinal and Maricopa Counties. Larvae averaged 18 per 100 sweeps in alfalfa on east side of Maricopa County. (Ariz. Coop. Sur.).

ALFALFA WEEVIL (Hypera postica) - WISCONSIN - Larva collected September 5 in northern Dane County; other larvae collected in Kenosha County. (Wis. Ins. Sur.). SOUTH DAKOTA - Negative in limited survey of alfalfa near Spearfish, Lawrence County. (Jones, Newlon).

CLOVER LEAF WEEVIL (Hypera punctata) - WISCONSIN - Adults more common on alfalfa. Averaged 3 per 50 sweeps in Sauk County; less common in Kenosha, Washington, Dane, and Columbia Counties. (Wis. Ins. Sur., Sept. 13).

CLOVER ROOT CURCULIO (Sitona hispidulus) - MISSOURI - Averaged 10 per 10 sweeps in clover field in Osage County. (Huggans).

CORN ROOTWORMS (Diabrotica spp.) - WISCONSIN - Few D. virgifera taken in alfalfa in State as of September 13. D. longicornis adults currently prevalent on alfalfa near corn in State; up to 5 adults per sweep on some alfalfa. (Wis. Ins. Sur.).

BLACK BLISTER BEETLE (Epicauta pennsylvanica) - COLORADO - Adults ranged 0-80 per 100 sweeps on alfalfa in Weld County. (Johnson).

PEA APHID (Acyrthosiphon pisum) - ARIZONA - Averaged 1,500 per 100 sweeps in 160 acres of alfalfa at Bonita, Cochise County. (Ariz. Coop. Sur.). COLORADO - Increased to 2,000-4,000 per 100 sweeps on alfalfa in Weld County. (Johnson). KANSAS - Negative in alfalfa examined in southeast district. Trace numbers, 5-15 per 10 sweeps, in alfalfa in Linn and Miami Counties. (Simpson).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - ARIZONA - Average per 100 sweeps in alfalfa by county: Cochise, 175 at San Simon; Pinal, 400 at Casa Grande; Maricopa, 225 in Salt River Valley; Yuma, 450 at Yuma. (Ariz. Coop. Sur.). OKLAHOMA - Mostly adults ranged 5-8 per 10 sweeps on alfalfa in Tulsa, Wagoner, and Le Flore Counties. (Okla. Coop. Sur.).

CITRUS MEALYBUG (Planococcus citri) - ARIZONA - Light on experimental greenhouse alfalfa at Tucson, Pima County, August 7. Determined by R.F. Wilkey. This is first established infestation reported from Pima County. (Ariz. Coop. Sur.).

LYGUS BUGS (Lygus spp.) - ARIZONA - Average per 100 sweeps in alfalfa by county: Yuma, 200 at Yuma; Maricopa, 45 in Salt River Valley; Pinal, 50 at Casa Grande; Cochise, 75 at San Simon. (Ariz. Coop. Sur.).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - ARIZONA - Averaged 500 per 100 sweeps in alfalfa at San Simon, Cochise County. (Ariz. Coop. Sur.).

## SOYBEANS

BEAN LEAF BEETLE (Cerotoma trifurcata) - OKLAHOMA - Ranged 2-25 per 25 sweeps in Wagoner, Muskogee, Haskell, Sequoyah, Tulsa, and Le Flore Counties. (Okla. Coop. Sur.). KANSAS - Averaged 8-25 per 10 sweeps in soybeans examined in southeast district. (Simpson). MISSOURI - Averaged 1-2 per row foot in southwest area; some light pod feeding. (Craig, Thomas). VIRGINIA - Adults damaged up to 40 percent of newly formed pods in 20-acre field in Nottoway County; adults 250 per 100 sweeps in field. (Allen).

MEXICAN BEAN BEETLE (Epilachna varivestis) - VIRGINIA - Generally light in Sussex, Southampton, Nansemond, Isle of Wight, and Prince George Counties; occasionally severe in these counties. (Allen). SOUTH CAROLINA - Present but noneconomic in most counties. (Thomas, Sept. 18).

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) - VIRGINIA - Adults 200 per 100 sweeps in Nottoway County; foliar damage moderate. (Allen).

GREEN CLOVERWORM (Plathypena scabra) - TENNESSEE - Infestations general in Haywood County. Leaf damage light to heavy; small pod damage light. (White). MISSOURI - Only occasional live larvae in southwest area. Larvae killed by fungus disease ranged 0-4 per square foot on ground. (Craig, Thomas). KANSAS - Light, 2-8 per 10 sweeps, in southeast and east-central districts; defoliation 20-35 percent in many fields. (Simpson).

CABBAGE LOOPER (Trichoplusia ni) - ARKANSAS - Mostly this species very numerous at Parkin, Cross County. Collections estimated at 3,500 September 17 and 3,000 September 18 in blacklight trap. (Wylie). About 150 moths taken per week in light trap at Kelso, Desha County, past 2 weeks. Increased daily from 26 to 241 at Kelso September 12-18 for total of 692. (Boyer).

GREEN STINK BUG (Acrosternum hilare) - MISSOURI - Ranged 5-40 per 30 feet of row in southwest area; highest counts in 20-40 marginal rows. (Craig, Thomas).

## PEANUTS

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - VIRGINIA - Larvae severe in spotted locations in Southampton County. Infested 50 percent of vines in some fields. Infestation normally correlated with drought. (Smith).

## COTTON

BOLL WEEVIL (Anthonomus grandis) - ALABAMA - Infestations continue heavy throughout northern area. Heavy buildup resulted from recent "hatchout" in Jackson County. Much control still in progress although some harvest taking place in northern area. (Richardson et al.). MISSISSIPPI - Infestations still high in some Yazoo County fields; punctured almost all squares and many young bolls. Controls still being applied in some late cotton fields. (Dinkins). OKLAHOMA - Punctured squares averaged 50 percent in Jefferson County and 5 percent in Wagoner County. Moderate in Washita County. (Okla. Coop. Sur.). TEXAS - Medium and widespread in Hall, Jones, and Wichita Counties. Heavy in scattered Wilbarger County fields and in Taylor County field. (Boring). For Boll Weevil in other areas see page 926.

BOLLWORMS (Heliothis spp.) - MISSISSIPPI - H. zea and H. virescens still active in many fields throughout delta; mostly third and later instars noted. Some young bolls damaged in late fields. (Dinkins). ARKANSAS - Of additional larvae collected in Jefferson County in August, 296 determined H. zea and 7 H. virescens. Total for season: 531 H. zea and 18 H. virescens. (Boyer). OKLAHOMA - H. virescens 75 percent of larvae checked at Chickasha, Grady County, and 60 percent at Newcastle, McClain County. H. zea egg and young larval infestations averaged 20 percent in Jefferson County; egg infestations averaged 50 percent in Wagoner County. Moderate in Washita County. (Okla. Coop. Sur.). TEXAS - H. zea medium in Wichita County. (Boring).

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Increasing despite treatments for pink bollworm and cotton leaf perforator at Yuma, Yuma County. (Ariz. Coop. Sur.). OKLAHOMA - Damage light to moderate in Jackson County. (Okla. Coop. Sur.).

A NOCTUID MOTH (Pseudoplusia includens) - TEXAS - Widespread and heavy in Eagle Pass and Crystal City area of Maverick and Zavala Counties; larvae 2-5 per infested leaf in some fields. (Tapscott).

COTTON LEAF PERFORATOR (Bucculatrix thurberiella) - ARIZONA - Some controls applied on third day between pink bollworm weekly applications at Yuma, Yuma County. Leaf damage heavy in much of Maricopa and Pinal Counties; some fields almost completely defoliated. Heavy flights caused alarm to some homeowners at Yuma. (Ariz. Coop. Sur.).

WHITEFLIES (Trialeurodes spp.) - TEXAS - T. vaporariorum heavy in Bowie County; honeydew excessive in many fields. (Turney, Lynch). ARIZONA - All stages of T. abutilonea heavy on foliage in few fields on west side of Maricopa County. (Ariz. Coop. Sur.).

## SUGARBEETS

BEET ARMYWORM (Spodoptera exigua) - ARIZONA - Increasing in Salt River Valley, Maricopa County. (Ariz. Coop. Sur.).

## POTATOES, TOMATOES, PEPPERS

EUROPEAN CORN BORER (Ostrinia nubilalis) - ALABAMA - Larvae becoming problem in most pimento pepper fields in De Kalb and other Sand Mountain counties. Larvae averaged 1 per plant in 14-acre pimento pepper field in De Kalb County. Pepper loss considerable. Additional loss will occur as rot increases due to accelerated fungus growth during wet weather. Lighter but widespread damage noted in 15 other fields inspected recently. (Parker et al.).

TOMATO FRUITWORM (Heliothis zea) - VIRGINIA - Moths numerous in Accomack County; egg laying in progress on various hosts. Special problem on fall tomatoes. (Hofmaster).

MELON APHID (Aphis gossypii) - ALABAMA - Probably this species very heavy on treated 3 to 4-acre pimento pepper field in De Kalb County. Honeydew and sooty mold covered leaves. (Smith, Parker).

## BEANS AND PEAS

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - ALABAMA - Heavy in commercial table pea plantings in 4-acre Coffee County field and in Blount County field. Numerous plants reaching production size dying due to larvae girdling plants and entering main stems. (Balch et al.).

## COLE CROPS

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Increasing in cauliflower, broccoli, and cabbage in Salt River Valley; Maricopa County; controls in progress. Heavy flights caused alarm to some homeowners at Yuma, Yuma County. (Ariz. Coop. Sur.). WISCONSIN - Continues numerous on cabbage in State. (Wis. Ins. Sur.). MICHIGAN - Damage continues; some crops lost. Additional control necessary in some fields. Control generally unsuccessful. (Janes, Sept. 16). VIRGINIA - Naturally occurring nuclear polyhedrosis virus appearing in early September greatly decreased larval populations in Accomack County. Occasional moths taken in Painter light trap past week. (Hofmaster).

CABBAGE MAGGOT (Hylemya brassicae) - WISCONSIN - Larvae found in culls in cabbage field in Kenosha County. Larvae infested heads and probably lower leaves of sound heads in commercial fields. Some growers concerned about probable contamination problem. (Wis. Ins. Sur., Sept. 13).

CABBAGE APHID (Brevicoryne brassicae) - WISCONSIN - Scarce in most commercial cabbage in Kenosha County; moderate in one planting in Washington County. (Wis. Ins. Sur., Sept. 13).

## CUCURBITS

SQUASH BUG (*Anasa tristis*) - OKLAHOMA - All stages heavy on watermelon checked in Payne County. (Okla. Coop. Sur.).

## GENERAL VEGETABLES

CABBAGE LOOPER (*Trichoplusia ni*) - ARIZONA - Heavy in lettuce field in Pinal County. Major problem in lettuce at Yuma, Yuma County. Eggs averaged 5 per young plant in most lettuce in Maricopa County. Treatments made in all fields statewide. Larvae averaged 40 per 100 sweeps in 80-acre sweetpotato field in Litchfield area, Maricopa County. (Ariz. Coop. Sur.).

SOUTHERN POTATO WIREWORM (*Conoderus falli*) - SOUTH CAROLINA - Collected 4,890 adults week ending September 8 compared with 1,140 and 1,504 for weeks ending August 25 and 18, respectively, at Charleston, Charleston County. (Cuthbert).

SLUGS - WISCONSIN - Continue on vegetables in State; problem in gardens in Walworth, Vilas, Brown, and Sauk Counties. (Wis. Ins. Sur., Sept. 13). OREGON - *Deroceras reticulatum* buildup heavy in Willamette Valley due to abnormally high rainfall. (Crowell).

## DECIDUOUS FRUITS AND NUTS

CODLING MOTH (*Carpocapsa pomonella*) - INDIANA - Adults in field decreasing at Vincennes. Collected 132 males in 30 sex lure traps compared with 151 previous week. (Wong, Sept. 16). OKLAHOMA - Larvae in 10 percent of apples checked at Perkins, Payne County. (Okla. Coop. Sur.).

ORIENTAL FRUIT MOTH (*Grapholitha molesta*) - INDIANA - Adult captures (515) similar to last week at Vincennes. (Wong, Sept. 16). OKLAHOMA - Larvae in 10 percent of peaches checked at Perkins, Payne County. (Okla. Coop. Sur.).

A SATURNIID MOTH (*Pseudohazis eglanterina*) - OREGON - Heavy flight along Columbia River near The Dalles, Wasco County, week of September 6. (Westcott).

RED-BANDED LEAF ROLLER (*Argyrotaenia velutinana*) - INDIANA - Male captures decreased slightly from 619 to 529 at Vincennes. (Wong, Sept. 16).

LESSER PEACH TREE BORER (*Synanthedon pictipes*) - INDIANA - Trapped 170 males compared with 266 last period at Vincennes. (Wong, Sept. 16).

APPLE MAGGOT (*Rhagoletis pomonella*) - RHODE ISLAND - Larvae numerous in poorly sprayed and unsprayed apple orchards in State. (Field, Sept. 10). INDIANA - Trapped 256 adults on stickyboard traps compared with 85 previous period at Vincennes. (Wong, Sept. 16).

WALNUT HUSK FLY (*Rhagoletis completa*) - OREGON - Second peak adult emergence reached September 7-13 at The Dallas, Wasco County; averaged 140 per trap in 6 traps for week. Several walnut trees completely infested. Earlier peak averaged 30 per trap in same location August 17-23. (Larson).

PEAR-SLUG (*Caliroa cerasi*) - UTAH - Severely skeletonized many cherry trees in Provo Bench and Orem area of Utah County. (Thornley, Sept. 18).

EUROPEAN RED MITE (*Panonychus ulmi*) - INDIANA - Gradual decline in most apple orchards at Vincennes due to oviposition of overwintering eggs and more predacious mites. (Wong, Sept. 16). RHODE ISLAND - Decreasing in Washington County orchards. (Field, Sept. 18).

## CITRUS

CALIFORNIA RED SCALE (*Aonidiella aurantii*) - ARIZONA - Infestations totaled 46 in older residential area of Tucson, Pima County. Survey continues. (Ariz. Coop. Sur.).

CITRUS THRIPS (*Scirtothrips citri*) - ARIZONA - Nurseries and young groves treated for protection of buds and young growth in Yuma and Maricopa Counties. (Ariz. Coop. Sur.).

CITRUS FLAT MITE (*Brevipalpus lewisi*) - ARIZONA - Heavy, spotted infestations at Yuma, Yuma County. (Ariz. Coop. Sur.).

## SMALL FRUITS

RASPBERRY CROWN BORER (*Bembecia marginata*) - ARKANSAS - Adults on blackberry in Washington County for a new county record. (Wylie).

## ORNAMENTALS

OLIVE SCALE (*Parlatoria oleae*) - CALIFORNIA - Heavy on California privet nursery stock at Sacramento, Sacramento County. (Cal. Coop. Rpt.).

A SOFT SCALE (*Coccus elongatus*) - FLORIDA - Severe on all 1,500 croton plants inspected September 12. (Ware, Griffith).

CITRUS MEALYBUG (*Planococcus citri*) - CALIFORNIA - Heavy on fuchsia nursery stock at Sacramento, Sacramento County. (Cal. Coop. Rpt.).

## FOREST AND SHADE TREES

BLACK TURPENTINE BEETLE (*Dendroctonus terebrans*) - ALABAMA - Several infestations on 30 to 60-foot pines in Auburn and Opelika, Lee County; groups of 2-5 trees per infestation. Much of cambium layer cut. Controls being applied. (McQueen).

PINE WEBWORM (*Tetralopha robustella*) - MARYLAND - Injury moderate in Virginia pine planting near Monkton, Baltimore County. (U. Md., Ent. Dept.).

EASTERN SPRUCE GALL APHID (*Adelges abietis*) - WISCONSIN - Began emergence by September 6. All galls opened in Dane and Jefferson Counties. Most in wing pad stage; all became winged in few days. Dispersal was rapid. (Wis. Ins. Sur.). RHODE ISLAND - Adults flying in Washington County. (Field, Sept. 10).

A CECIDOMYIID MIDGE (*Cecidomyia* sp.) - COLORADO - Heavy on pinyon pine in shelter belt in Washington County. (Pilcher).

BRONZE BIRCH BORER (*Agrilus anxius*) - WISCONSIN - Based on dead or dying white birch trees in southern area, numbers more abundant than normal. (Wis. Ins. Sur.). OHIO - Damage more common than usual on birch in central area in 1968. Many partially killed trees in Delaware and Franklin Counties as of September 11; larvae under bark. (Galford).

CHRYSOMELID BEETLES - VIRGINIA - *Xenochalepus dorsalis* adults feeding on black locust foliage and larvae mining leaves in Montgomery County. Determined by M. Kosztarab and W.A. Allen. (Allen). RHODE ISLAND - *Plagiodera versicolora* numerous on willow. (Field, Sept. 11).

MIMOSA WEBWORM (*Homadaula anisocentra*) - OKLAHOMA - Leaf damage to mimosa ranged as follows: Muskogee, Muskogee County, 20-40 percent on 4 trees; Stigler, Haskell

County, 10-70 percent on 10 trees; Sallisaw, Sequoyah County, 10-90 percent on 10 trees; Tahlequah, Cherokee County, 10-50 percent on 8 trees; Spiro, Le Flore County, 30-90 percent on 6 trees. (Okla. Coop. Sur.).

FALL WEBWORM (Hyphantria cunea) - WISCONSIN - Third instar to full-grown larvae in Rock County September 10; many pupated. (Wis. Ins. Sur., Sept. 13). OHIO - Larvae continue feeding on various deciduous trees through most of eastern area. (Rose).

## MAN AND ANIMALS

MOSQUITOES - UTAH - Annoyance reduced but still exists despite cooler weather in communities of Box Elder, Davis, Millard, and Cache Counties. (Knowlton, Sept. 18). MINNESOTA - Generally light in light traps September 7-13; of 1,078 females, Aedes vexans 610 and Culiseta morsitans 213. A. vexans predominant in larval and bite collections. As of September 17, two egg samples showed 30 and 33 percent hatch (slight increase) in laboratory; week of warm, sunny weather preceded taking of samples. (Minn. Ins. Rpt.). WISCONSIN - Adult activity resurged in several areas. A. dorsalis biting in late afternoon on eastern side of Madison. (Wis. Ins. Sur.).

SCREW-WORM (Cochliomyia hominivorax) - Total of 378 cases reported in U.S. September 15-21 as follows: TEXAS - Atascosa 7, Bandera 1, Bee 3, Bexar 1, Brewster 10, Brooks 18, Cameron 2, Comal 1, Coke 1, Crockett 9, De Witt 4, Dimmit 5, Duval 1, Edwards 12, Garza 1, Gillespie 2, Goliad 3, Hidalgo 8, Irion 1, Jeff Davis 30, Jim Hogg 4, Jim Wells 1, Karnes 5, Kenedy 4, Kerr 1, Kimble 2, Kinney 10, Kleberg 1, Mason 2, Maverick 10, Medina 2, Menard 1, Nueces 2, Pecos 58, Presidio 6, Real 2, Reeves 8, Refugio 20, San Patricio 2, Starr 2, Sutton 2, Terrell 39, Tom Green 1, Uvalde 3, Val Verde 30, Victoria 2, Webb 2, Willacy 1, Wilson 3, Winkler 1, Zapata 1, Zavala 3; ARIZONA - Cochise 3, Graham 2, Maricopa 1, Mohave 2, Pima 1, Pinal 2, Santa Cruz 1, Yavapai 4; NEW MEXICO - Catron 1, Eddy 2, Grant 1, Hidalgo 1, Otero 2, Lea 1; CALIFORNIA - San Diego 3. Total of 839 cases reported in portion of Barrier Zone in Republic of Mexico as follows: Territorio sur de Baja California 64, Sonora 230, Chihuahua 236, Coahuila 238, Nuevo Leon 52, Tamaulipas 19. Total of 60 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 102,018,000; New Mexico 3,020,000; Arizona 11,160,000; California 900,000; Mexico 82,510,000. (Anim. Health Div.).

FACE FLY (Musca autumnalis) - TENNESSEE - Collected in Decatur County for new county record. Determined by H. Williams. (Williams, Quillin). WISCONSIN - In Clark and Calumet Counties. (Wis. Ins. Sur., Sept. 13). Clark County is a new county record. (PPC). UTAH - Still annoyed horses and cattle in northern area. (Knowlton, Sept. 18).

STABLE FLY (Stomoxys calcitrans) - WISCONSIN - Increased; severe in Columbia, Clark, Jefferson, and Calumet Counties but moderate in Trempealeau and Winnebago Counties. (Wis. Ins. Sur., Sept. 13).

HORN FLY (Haematobia irritans) - OKLAHOMA - Ranged 600-1,000 per head on cattle in Major County. Counts per head averaged 1,450 on yearlings and 750 on cows in Payne and Noble Counties. Heavy in Mayes County. Moderate in Cleveland County. (Okla. Coop. Sur.).

A LOUSE FLY (Lipoptena mazamae) - OKLAHOMA - Ranged 2,000-3,000 per head on deer checked in Cherokee and Muskogee Counties. (Okla. Coop. Sur.).

GIANT HORNET (Vespa crabro germana) - INDIANA - Four adults collected in blacklight trap at Bedford, Lawrence County. This is a new county record. (Huber).

HARD-BACKED TICKS - TEXAS - Dermacentor variabilis light on cattle near Carrizo Springs, Dimmit County. (Dodgen). OKLAHOMA - Amblyomma americanum larvae and nymphs decreased on deer in Cherokee and Muskogee Counties. First Ixodes scapularis adults on deer. (Okla. Coop. Sur.).

## HOUSEHOLDS AND STRUCTURES

ELM LEAF BEETLE (Pyrrhalta luteola) - CALIFORNIA - Medium nuisance in residences and yards locally in North Highlands, Sacramento County; adults migrating earlier this year. (Cal. Coop. Rpt.).

FIELD CRICKETS (Gryllus spp.) - ARIZONA - Heavy numbers annoying homeowners at Buckeye, Maricopa County. (Ariz. Coop. Sur.).

## STORED PRODUCTS

TOBACCO MOTH (Ephestia elutella) - SOUTH CAROLINA - Infesting tobacco in packhouses in Marion County. Expected to increase in tobacco areas because amount of tobacco stored on farms greater than in past. (Nettles, Sept. 18).

ALMOND MOTH (Cadra cautella) - TEXAS - Infested clover seed at Crockett, Houston County. (Percival).

GRAIN MITE (Acarus siro) - MARYLAND - Extremely heavy in dairy feed supply near Westminster, Carroll County. (U. Md., Ent. Dept.).

## BENEFICIAL INSECTS

A TEPHRITID FLY (Paracantha culta) - COLORADO - Larval infestation 100 percent in bull thistle in Weld County; destroyed 25 percent of seeds in heads. (Colo. Ins. Sur.).

## FEDERAL AND STATE PLANT PROTECTION PROGRAMS

BOLL WEEVIL (Anthonomus grandis) - TEXAS - Traps checked in El Paso area and south to Ruidosa. Two specimens taken from traps: One from field 8 miles south of Fabens and one from field near El Paso and Hudspeth County line. Delimiting work in these 2 fields gave negative results. One adult, one egg puncture, and 18 feeding punctures found in only one field during survey from Redford through Candelaria. Trap catches increased greatly last week of August in old control zone of High Plains area. Migrating weevils found in area around rim of Caprock, beginning in southeast corner of Dawson County, including projection of Caprock into Borden County, and extending up to rim of Caprock into Lynn County. Infestation light on about 25,000 acres. (PPC South. Reg., Aug. Rpt.). For Boll Weevil in other areas see page 921.

BOLL WEEVIL COMPLEX (Anthonomus grandis complex) - ARIZONA - Recovered 10 from 5 wing traps placed in thurberia in Molino Basin area of Catalina Mountains; weevils heavy in area now. Installed 25 wing traps in 53-acre cotton field in Avra Valley northwest of Tucson; area heavily infested last season. No weevils or feeding signs observed during August in this location. (PPC West. Reg., Aug. Rpt.).

GRASSHOPPERS - WISCONSIN - Melanoplus femurrubrum nearly all adults; most females examined contained eggs. Populations variable but not startling. (Wis. Ins. Sur., Sept. 13). WYOMING - Counts of 8 or more per square yard on 1,164,300 acres of rangeland during fall adult survey. Number of acres infested by county: Albany 32,000; Campbell 38,000; Converse 100,000; Crook 48,000; Fremont 101,000; Goshen 125,000; Hot Springs 41,000; Johnson 160,000; Laramie 20,000; Natrona 50,000; Niobrara 230,000; Park 30,000; Platte 72,000; Sheridan 44,800; Sublette 2,500; and Weston 70,000. (Patch).

IMPORTED FIRE ANT (*Solenopsis saevissima richteri*) - ARKANSAS - Reinfested area in vicinity of nursery near El Dorado, Union County. Surveys of generally infested area in southeast Union County show buildup in Strong and Huttig area. (Shotts).

JAPANESE BEETLE (*Popillia japonica*) - MICHIGAN - Single finds made at 6 locations in Monroe County and at 4 locations in Lenawee County. Infested about 2,000 acres at Warren, Macomb County; several hundred adults collected. Infested about 4,800 acres in Berrien County; approximately 600 adults trapped. (PPC Cent. Reg., Aug. Rpt.).

MEXICAN FRUIT FLY (*Anastrepha ludens*) - CALIFORNIA - Recovered 41 sterile flies in San Diego County; had been released in Baja California, Mexico. (PPC West. Reg., Aug. Rpt.).

MORMON CRICKET (*Anabrus simplex*) - UTAH - Light in areas with past history of severe outbreaks. (PPC West. Reg., Aug. Rpt.).

PINK BOLLWORM (*Pectinophora gossypiella*) - CALIFORNIA - Seasonal totals of 8,259 in Imperial Valley and 4,938 in Coachella Valley in August. Seasonal total in 5 traps increased from 29 in July to 1,872 in August at Needles; seasonal total of 85 in 1 trap at Borrego Springs, San Bernardino County. (PPC West. Reg.). Trapping continues. All green boll inspections in Imperial Valley terminated for season. Cotton bolls in Central Valley beginning to open. Total of 6,000 sterile moths released in Borrego Valley, San Diego County. Larval infestation about 23 percent. Sterile moths released in Kern County totaled 673,087; largest release up to September 20. No native moths trapped or larvae recovered to same date. (Cal. Coop. Rpt.). NEVADA - Adults increased sharply in sex lure traps. Collected 9 males September 13, 36 males September 16, and 9 males September 18 in Moapa Valley, Clark County. Collected 21 males September 11-12 in 5 fields in Pahrump Valley, Nye County, for first adults of season. (Bell, Yamashita). No larvae in bolls checked in Pahrump Valley, Nye County. (McLudden). ARIZONA - Few larvae in lint cleaners at Yuma, Yuma County. No treatments in Graham County past week. Building up northeast of Solomonville. Larvae 2 per 200 bolls in 5-acre field at San Simon, Cochise County. Situation good in Maricopa, Pima, and Pinal Counties. (Ariz. Coop. Sur.). TEXAS - Very light in most areas during inspections in August. About 12,000 acres of stalks destroyed in Harlingen district. (PPC South. Reg.).

RANGE CATERPILLAR (*Hemileuca oliviae*) - NEW MEXICO - Observations made in Colfax, Harding, and Union Counties. Found in Colfax County west of treated areas. No heavy infestations observed. Very few infestations reported within treated areas in these 3 counties. Small infestation reported on ranch east of Raton, immediately north of treated area. Infestations reported near Tecolote, south of Corona, to be checked. (PPC West. Reg., Aug. Rpt.).

A SEED CHALCID (*Megastigmus pistaciae*) - CALIFORNIA - Preliminary results of chalcid control on pistachio trees in Plant Introduction Gardens, Chico, Butte County, indicate good control. Flotation of pistachio seed and nut varieties, with and without hulls, shows that virtually all firm full nuts sink in water. Lack of infested nuts this season precludes development of useful inspection technique by flotation. No larvae were found in nuts taken from trees that had 37 percent infestation in 1967 and were treated in 1968. One larva was found in about 150 nuts from two control trees. (Cal. Coop. Rpt.).

WHITE-FRINGED BEETLES (*Graphognathus* spp.) - GEORGIA - New infestations found in Decatur, Fulton, Miller, Stewart, Thomas, and Worth Counties; extensions noted in Carroll, Coffee, Colquitt, Grady, Lowndes, Seminole, Toombs, Turner, Wilcox, and Worth Counties. (PPC South. Reg., Aug. Rpt.).

## HAWAII INSECT REPORT

Turf, Pasture - Larvae of a GRASS WEBWORM (Herpetogramma licarsisalis) light to moderate (32 per square foot) in Kikuyu grass pasture at ranch on Hawaii Island, at 800 feet elevation. Eucelatoria armigera (a tachina fly) averaged 6 and Casinaria infesta (an ichneumon wasp) averaged 2 per 10 sweeps in pasture. (Yoshioka).

General Vegetables - All stages of BEAN FLY (Melanagromyza phaseoli) heavy on snap beans in Waikapu, Maui, at 500 feet elevation. Damage about 33 percent on young bean plants in small backyard planting. (Ah Sam, Miyahira). GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) adults medium on snap beans in Omaopio and Pulehu, Maui, at 2,200-2,400 feet elevation. Larvae and adults of LEAF MINER FLIES (Liriomyza spp.) and CHINESE ROSE BEETLE (Adoretus sinicus) heavy on snap beans at Pulehu, Maui; adults heavy at Omaopio. A. sinicus damage light on snap beans at Omaopio. (Miyahira).

Ornamentals - ORCHID WEEVIL (Orchidophilus aterrimus) adults caused noticeable damage on vanda orchid blossoms at Hilo, Hawaii Island. Weevils readily detected on stems and blossoms. (Yoshioka).

Forest and Shade Trees - GREENHOUSE THRIPS (Heliothrips haemorrhoidalis) adult feeding damage light on Monterey pine needles at Kaaweiki Ridge at Kokee, Kauai, at 3,500 feet elevation. First record of thrips damage to this host on Kauai. Heavy damage previously noted on Monterey pine on Molokai in July 1962. (Hobdy, Sugawa). FULLER ROSE WEEVIL (Pantomorus cervinus) adult foliar damage moderate to heavy on Scaevola sp. (a forest shrub) in same area of Kauai. Damage light to loblolly pine needles and moderately heavy to juvenile and mature leaf growth of Acacia koa saplings. (Davis et al.).

Beneficial Insects - A PTEROMALID WASP (Halticoptera patellana) reared from Melanagromyza phaseoli (bean fly) in young snap bean plants collected at Waiahole, Oahu, in July 1968. This is first record of a parasite on M. phaseoli. Determined by C. Yoshimoto. H. patellana reared previously from undetermined leaf miner flies collected on cabbage, peanut, and onion foliage. (Chong). EUPATORIUM GALL FLY (Procecidochares utilis) larvae and galls heavy on pamakani in Auwahi, Maui, at 4,000-5,000 feet elevation. Area cleared 2 years ago; very light on first year's regrowth. Apparently very active last 6 months. (Miyahira, Tamura). LANTANA HISPID (Uroplata girardi) larvae and adults heavy on 40 acres of lantana in Ulupalakua, Maui, at 2,000 feet elevation. Mines and adults more abundant than in past years. (Ah Sam, Miyahira). MELASTOMA BORER (Selca brunella) larvae moderate on fruits of Melastoma malabathricum (a noxious weed) at Kilohana, Kauai, at 1,000 feet elevation. Of 50 fruits randomly collected, 27 (54 percent) were infested and severely damaged. Adults and eggs of a PLATASPID BUG (Coptosoma xanthogramma) abundant on sesbania at Poipu, Kauai. Of 358 eggs collected in 5 minutes, 266 (74.3 percent) parasitized by Trissolcus sp. (a scelionid wasp). (Davis, Sugawa).

## INSECT DETECTION

### New County Records

SPOTTED ALFALFA APHID (*Therioaphis maculata*) - SOUTH DAKOTA - Edmunds, Hyde, and Faulk Counties. (p. 917).

WESTERN BEAN CUTWORM (*Loxagrotis albicosta*) - NEBRASKA - Saunders County. (p. 918).

A CRICKET (*Anurogryllus muticus*) - MARYLAND - St. Marys County. (p. 919).

RASPBERRY CROWN BORER (*Bembecia marginata*) - ARKANSAS - Washington County. (p. 924).

FACE FLY (*Musca autumnalis*) - TENNESSEE - Decatur County. WISCONSIN - Clark County. (p. 925).

GIANT HORNET (*Vespa crabro germana*) - INDIANA - Lawrence County. (p. 925).

## LIGHT TRAP COLLECTIONS

KANSAS - Garden City - 9/14-18, BL - Army cutworm (*Chorizagrotis auxiliaris*) 120, armyworm (*Pseudaletia unipuncta*) 35, black cutworm (*Agrotis ipsilon*) 173, corn earworm (*Heliothis zea*) 194, variegated cutworm (*Peridroma saucia*) 2, wheat head armyworm (*Faronta diffusa*) 13, yellow-striped armyworm (*Prodenia ornithogalli*) 18. Tribune - 9/17, BL - Army cutworm 3, corn earworm 1, wheat head armyworm 1. MISSISSIPPI - Stoneville - 9/14-20, 2BL, 54-88°F., precip. 3.44 - Armyworm 343, beet armyworm (*Spodoptera exigua*) 81, black cutworm 29, cabbage looper (*Trichoplusia ni*) 467, corn earworm 521, fall armyworm (*S. frugiperda*) 99, granulate cutworm (*Feltia subterranea*) 66, salt-marsh caterpillar (*Estigmene acrea*) 50, tobacco budworm (*H. virescens*) 21, tobacco hornworm (*Manduca sexta*) 17, tomato hornworm (*M. quinquemaculata*) 1, variegated cutworm 4, yellow-striped armyworm 605. MISSOURI - Fair Grove - 9/12-18 - Armyworm 91, black cutworm 6, corn earworm 183, European corn borer (*Ostrinia nubilalis*) 91, fall armyworm (*Spodoptera frugiperda*) 158, variegated cutworm 4, yellow-striped armyworm 40. Portageville - 9/14-20 - Armyworm 7, black cutworm 1, corn earworm 69, European corn borer 40, tobacco budworm 2, yellow-striped armyworm 3. NEW JERSEY - Aura - 9/11-18, BL - Armyworm 38, black cutworm 15, fall armyworm 3, hornworms (*Manduca* spp.) 1, variegated cutworm 2, yellow-striped armyworm 21. Evesboro - 9/11-18, BL - Armyworm 5, black cutworm 4, corn earworm 1, fall armyworm 4, hornworms (*Manduca* spp.) 1, variegated cutworm (*Peridroma saucia*) 2, yellow-striped armyworm 2. Plainsboro - 9/11-18, BL - Armyworm 7, black cutworm 6, cabbage looper 2, fall armyworm 3, hornworms (*Manduca* spp.) 3, variegated cutworm 9, yellow-striped armyworm 3. Seabrook - 9/11-18, BL - Armyworm 8, black cutworm 15, cabbage looper 2, corn earworm 1, European corn borer 7, fall armyworm 4, variegated cutworm 13, yellow-striped armyworm 10. OHIO - Hilliard - 9/12-18, BL - Armyworm 21, black cutworm 24, corn earworm 6, European corn borer 42, fall armyworm 4, variegated cutworm 14, wheat head armyworm 6, yellow-striped armyworm 12. Wooster - 9/12-18, BL - Armyworm 104, black cutworm 15, corn earworm 10, fall armyworm 15, European corn borer 22, variegated cutworm 30, wheat head armyworm 27, yellow-striped armyworm 2. TEXAS - Waco - 9/14-20, BL - Armyworm 88, beet armyworm 182, black cutworm 22, cabbage looper 1,332, corn earworm 235, fall armyworm 1, granulate cutworm 93, salt-marsh caterpillar 1, tobacco budworm 24, variegated cutworm 25, yellow-striped armyworm 21. WISCONSIN - Madison - 9/13-18, BL - Armyworm 29, black cutworm 11, corn earworm 3, European corn borer 11, variegated cutworm 17.

# THE GREENBUG IN THE ATLANTIC COAST STATES

(*Schizaphis graminum* (Rondani))
(Homoptera: Aphididae)

Mortimer D. Leonard[1]

The greenbug, for many years placed in *Toxoptera*, apparently was first recorded in the United States at Culpeper, Virginia, in 1882. Within the next two or three decades it became distributed throughout the country except in New York, New Jersey, Delaware, Connecticut, Rhode Island, New Hampshire, and Maine. Although early and injurious outbreaks were periodically recorded in Georgia, South Carolina, North Carolina and Virginia, the greatest injury occurred in the grain-producing States in the more central part of the country. This is still true. Wheat and oats are the principal grain crops affected. The greenbug is one of the first aphids recorded to produce widespread and injurious outbreaks in the United States.

Because a great deal more is known about the greenbug in the large grain-producing States, it seemed desirable to collect the available records for the Atlantic Coast States. Many of the records included here were published in the Insect Pest Survey Bulletin of the former U.S. Bureau of Entomology. Numerous others previously were unpublished.

The States are arranged geographically from Florida to Maine. Under each, the data on the greenbug are arranged in chronological order. Although the District of Columbia and Pennsylvania do not quite reach the Atlantic Ocean, the available records for these are included. Since the greenbug has been found in New Brunswick and Nova Scotia in eastern,Canada these also are included.

Appreciative acknowledgement is made to Survey and Detection Operations, Plant Pest Control Division, Agricultural Research Service, United States Department of Agriculture for making available records from their Scientific Records System. These are indicated by "IPS" in reference to their original inclusion in the former Insect Pest Survey files and "SRS" for the present system. Thanks are also due to individuals in the several States who have supplied records, many of which were unpublished.

## FLORIDA

The following records are from slides in the Florida Agricultural Experiment Station. They were kindly furnished to me by Dr. A. N. Tissot of the University of Florida (Emeritus) and determinations were made by him unless otherwise stated. Names in parentheses are those of the collectors.

Two slides presumably made by A. L. Quaintance from Lake City, May 10, 1897. Gainesville--April 23, 1914, from oats (A. C. Mason); March 17 and 31, 1921, (O. H. Beyer); March 9, 1928, on oats (Tissot). Lake Alfred--July 10, 1929, on crabgrass (W. L. Thompson). Gainesville--February 2, on wheat (W. B. Tisdale) and March 1, 1932, on wheat (Tissot); January 25, 1932, on oats (Camp and Tissot); June 23, 1939, on crabgrass, *Eleusine* sp. (Tissot). Paxton--November 21, 1937, on oats (Blackmon). Pensacola--October 29, 1943, on oats (J. O. Murphy). Sawdust (Gadsden County)--December 29, 1947, on oats (K. Dorward). Gainesville--January 12, 1950, on oats (L. C. Kuitert). Sarasota--March 18 (E. G. Kelsheimer) and Fort Pierce--December 26, 1952, (W. C. Genung) on Pangola grass, *Digitaria* decumbens. Belle Glade--November 2, 1953, on fescue (Genung). Kendall--December 17, 1953, on Pangola grass (D. O. Wolfenbarger). Gainesville--January 14, 1953, on oats in greenhouse (Kuitert), on oats in air-conditioned chamber May 3, 1957, (H. H. Luke), and March 11, 1957, on Pangola grass (Tissot and Kuitert).

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[1] Collaborator, Entomology Research Division, Agricultural Research Service, U.S. Department of Agriculture.

The following are from Plant Pest Control Division records: Quincy area--November 1946, considerable damage to oats (F. S. Chamberlin, IPS). Belle Glade--December 12, 1952, severe infestation of oats for grazing (W. C. Genung, SRS). Population on oats and Pangola grass attacked excessively by hymenopterous parasites during January 1953 in the Everglades; aphids appearing again in the Everglades on Pangola grass October 29 and heavy parasitism in November. (Genung et al., summary 1953 in SRS). "Nymphs and adults have caused some apparent damage to Pangola grass . . . at the Smith Cattle Ranch, Davie, December 23. Caused a medium infestation of nymphs and adults on Pangola grass at the Imperial Ranch, Davie; and 2 to 3 nymphs and adults per plant on Pangola grass 2 miles east of Davie. No apparent damage was indicated. December 31." (H. A. Denmark, summary 1954 in SRS). "On Pangola grass pastures . . . showed an increase during the first 3 weeks of March at Everglades Experiment Station." (Genung, summary 1955 in SRS).

For 11 of the 15 years between 1949 to 1963, Dr. Tissot collected winged aphids which had been "trapped" by the sticky leaves of tobacco. This was done in Gainesville during the tobacco-growing season from April to June. The number of specimens of the greenbug by years is shown in the following table:

| Year | No. | Year | No. |
|---|---|---|---|
| 1949 | 12 | 1957 | 6 |
| 1950 | 7 | 1958 | 4 |
| 1951 | 1 | 1961 | 25 |
| 1952 | 1 | 1962 | 12 |
| 1953 | 11 | 1963 | 4 |
| 1954 | 2 | | |

## GEORGIA

"Found in the following counties: Tift, Charlton, Brooks, Wilcox, Richmond and Johnson on oats and wheat." (Report by M. S. Yeomans to IPS, March 7, 1929).

"Fort Valley--November 16, 1929, on oats. The infestation is unusually heavy this year and considerable damage has already been done. Deadened areas are appearing in green fields as a result of the damage by this insect." (Report by O. I. Snapp to IPS).

"During the late winter and spring an investigation was made of the unusual outbreak of the green bug or spring grain aphid, which affected oats and wheat in the Piedmont and upper Coastal Plain regions of Georgia, as well as neighboring states. Almost every farmer interviewed was entirely unfamiliar with green bug injury and this outbreak was evidently the worst ever suffered in Georgia. The insect is not new to the state, as there are records of outbreaks in several years, notably 1907 and 1914, and there was damage at Experiment in 1935.

"Injury by this insect appeared first as dead spots and streaks in the grain fields, but finally large areas or whole fields were destroyed in some cases. In some fields spots were not so evident, but plants over a wide area were thinned out. According to the records obtained, injury was first observed by grain farmers late in December of 1936 and became widespread during the following month. Injury seemed to slack during February, but continued again during March. Green bug feeding had ceased entirely by May 20 when harvest was beginning. Almost all the damage was to oats, although an occasional field of wheat was attacked.

"The survey brought out the following points as to green bug attacks on oats:

1. Oats sown before October 15, in the Piedmont region, usually had more injury than oats sown the latter part of October or early November.

2. Grain on poor land, such as in washed areas, suffered more than that on fertile land. Injury was more evident on gray, sandy land than on the heavier red soils.

3. The outbreak was caused by the unusually warm weather during the fall and winter, such weather making development of the green bug rapid. There was a small excess in temperature for the state during September and October, a small deficiency in November, and an excess again December, January and February. The warmest period began December 22 and ended January 31. This was the warmest January on record for Georgia, according to reports of the U. S. Weather Bureau, the average daily excess for the state being 11 degrees.

There was an excess in rainfall in the same months in which the temperature was high but the possible influence on insect numbers is not known.

4. Infestation of a field often started from volunteer oats.

5. Throughout the counties surveyed, no difference in injury between oat varieties was apparent though in the Agronomy plots at the Experiment Station some interesting differences of this type did show." (Georgia Agricultural Experiment Station Annual Report 1936-1937, pp. 48-50). No details are available to substantiate the outbreaks in 1907 and 1914. T. L. Bissell tells me he prepared the foregoing report on the greenbug.

Reynolds--1941, "Two reports from Reynolds (west central Georgia) of greenbug injury to oats dated January 9 and 15. Considerable patches of oats have died." (Report by T. L. Bissell to IPS).

On January 29, 1941, R. W. Harned reported as follows to IPS: "In a letter dated January 27, 1941, Dr. P. M. Gilmer, Tifton, Georgia, states that the green bug is seriously attacking winter oats throughout the State of Georgia. He has noted that the infestation is rather heavy in the vicinity of Tifton and in several other counties of Southern Georgia. He states that Mr. Parham and Mr. Turner of the Georgia Coastal Plain Experiment Station recently made a rather extended trip through the State and reported that the damage is exceptionally heavy.
Dr. Gilmer states further that based on his observations of this insect in Kansas and Oklahoma he considers the infestation in Georgia rather heavy and that extensive damage will undoubtedly be caused. He has observed some fields in which all of the plants have been killed over areas as large as half an acre. In his opinion, although the damage will be serious, it will not be as great as seems to be anticipated by many of the farmers."

"There is still a small infestation of green bug, occurring sporadically on oats in Tift, Lowndes and Echols counties. There has been a build-up of parasites, such as Lysiphlebus, upon this grain aphid." (Report by P. W. Gilmer to IPS, May 3, 1941).

"There has been a mild outbreak of the greenbug on oats this winter. Reports come from Taylor County, January 9 and 15 (2 farms); Spalding County, January 31; and Pike County, February 7--Spots in fields had died out; on one farm the estimated loss was 10 percent. The parasite, Lysiphlebus testaceipes, has been at work from the first report, January 9." (Report by T. L. Bissell to IPS, February 20, 1941).

"Damage to grain by greenbugs has increased during the last two weeks, and some farmers have used airplanes to apply insecticides for control." (Report by O. I. Snapp, Fort Valley, to SRS, February 2, 1950).

"Infestations were light to moderate and well distributed over the State on small grain." (Report by W. C. Johnson, summary 1957 in SRS).

## SOUTH CAROLINA

Regarding the outbreak of 1903, Webster and Phillips (p. 24) say: "This outbreak was, however, an incipient one and resulted in little injury, the seriously infested areas being confined to northern Texas, exclusive of the 'Panhandle,' with possibly the country in the then Oklahoma and Indian Territories bordering the Red River, and in South Carolina."

"North and South Carolina also suffered somewhat from the depredations of this insect in 1907. The senior author made a trip into this section reaching Sumter, S. C., April 17, 1907. He found that all fields of oats, the only grain sown, were more or less affected; here and there brown areas occurred, showing the characteristic work of Toxoptera. This condition was noticeable from Sumter, S. C., to Charlotte, N. C., indicating that the infestation was general." (Webster and Phillips, p. 36).

Recorded from Bennettsville, Hartsville, and Monetta 1903 and Batesburg 1911. (U.S. Bur. Ent. correspondence).

Columbia--April 13, 1925, on winter oats. "Infestation general but slight. Ladybird beetles and syrphids at work. No serious damage expected. Oats heading out." (Report by P. Luginbill to IPS).

Oconee County--January 10, 1927, specimens received and reported as destroying a two-acre field of oats. It possibly occurs in small numbers elsewhere in the State but has not been observed or reported. (Report by J. O. Pepper to IPS, February 21, 1927).

Florence--April 20, 1935, several outbreaks on oats; natural enemies active (report of F. Sherman and associates to IPS); spring 1935, severe outbreaks on oats and rye (coll. by C. F. Rainwater and det. by P. W. Mason); and November 16, 1948, on oats (coll. by L. C. Fife and det. by L. M. Russell). [From files, Department of Entomology, Clemson University.]

Barnwell County--1937, specimens collected on oats and rye. (Report by W. C. Nettles to IPS).

Considerable infestation and damage to early planted winter oats and wheat in eastern half of State, March 22, 1941. (Report by Nettles to IPS).

Brunson--1929, injuring oats. (Report by J. N. Tenhet in Insect Pest Survey Bul. 9(1):9, 1929).

Clemson College--April 19, 1931, on oats (coll. by Nettles and det. by A. N. Tissot); April 24, 1960, 2 alatae in trap light (det. by B. F. Coon). [In files, Department of Entomology, Clemson University.]

## NORTH CAROLINA

Mebane, Alamance County--January 26, 1890, reported as ruining both wheat and oats. (Webster and Phillips, p. 20).

Occurred on wheat and oats in March 1907 in Franklin and Forsyth Counties and in April in Davie, Forsyth, Guilford, Union and Rowan Counties. (Report by F. Sherman to IPS).

"We received a letter with specimens from Mr. L. M. Smith, Mr. Sherman's assistant, at Newport, Carteret County, N. C., stating that he found a small field of oats in the outskirts of town that was considerably damaged by Toxoptera. This county is on the coast and Newport has an elevation of 19 feet. From this it seems that in all probability Toxoptera covered the entire State." (Webster and Phillips, p. 37). This note is in connection with the 1907 outbreak.

Chadbourn--November 19, 1929, "There is a rather wide-spread infestation of this aphid on early planted oats in this section. Some of the growers are complaining of losing their stand of plants due to this insect. The tips of the leaves are already dead on many plants and all living areas of leaves are clustered with aphids." (Report of W. A. Thomas to IPS).

Statesville--April 20, 1954, barley in the vicinity generally infested, in some fields as much as 10 percent of plants with developing colonies. Infestation south and east of Statesville less severe. Oats and wheat just becoming infested, with single adult aphids scattered through fields. (Report by T. B. Mitchell to SRS).

"Was widespread in Forsyth County on small grain in the spring and in Harnett County in the fall." (M. H. Farrier, summary 1955 in SRS).

"Negative during the 1959-60 winter. Infestation had killed 25 to 75% of some fields of oats and rye in Nash County by early December and portions of other fields were beginning to turn brown." (M. H. Farrier, summary 1960 in SRS).

In April 1968, Dr. Clyde F. Smith of the University of North Carolina sent me the records of the following collections made by him: Willard--November 29, 1943, on oats; Raleigh--February 12, 1947, on oats; Lexington and Waynesville--1958, on oats; Nashville--December 3, 1960, on oats and rye. Dr. Smith wrote, "As far as North Carolina is concerned I am sure that the greenbug is a pest throughout the State. This is especially true if warm weather continues late into the fall. Most of the damage occurs in the fall rather than in the spring of the year."

## VIRGINIA

"The first examples of Toxoptera graminum to be found in America and identified as such were probably collected with the oats plants which they were destroying by Mr. H. S. Alexander, of Culpeper, Va., on June 15, 1882." The authors further state that Mr. B. F. White of Mebane, North Carolina, in a letter dated January 28, 1890, wrote that this same insect had appeared in his area in 1882, in May. They therefore concluded . . . it seems quite likely that, while the discovery was first made at Culpeper, Va., the insect occurred over a considerable area of country in Virginia, extending southward into northern North Carolina . . ." (Webster and Phillips, pp. 13 and 14).

In 1907 "The senior author also found Toxoptera in destructive abundance at Midlothian, Chesterfield County, Va., in a small meadow of orchard grass. Mr. J. L. Phillips, the State entomologist, reported a slight outbreak at Cloverdale, Botetourt County, Va., in rye, and stated that considerable damage had been done in some parts of the field." (Webster and Phillips, p. 37).

"Grain aphis - Several reports lately of damage being done in Goochland County - specimens received. Have examined fields of wheat in Shenandoah Valley Counties. Fairly abundant in early planted fields, but apparently doing no damage . . . Fields between Richmond and Scottsville along James River all more or less infested but apparently no damage." (Report by C. R. Willey to IPS, February 23, 1932).

"We have had a number of complaints about the greenbug (Toxoptera graminum Rond.) on wheat. These have come from a number of counties in each wheat growing section and from Halifax County just out of the wheat belt. The County Agents have reported that many wheat fields have been severely damaged by the feeding of this pest." (Report by W. J. Schoene to IPS, February 22, 1932).

Augusta County--December 12, 1941, plants in one field of barley killed over an area of 50 feet long and 20 feet wide but the infestation extended only 2 or 3 feet beyond this killed area. (Report by A. M. Woodside to IPS).

New Kent or Charles City County--December 12, 1956, believed causing discoloration of oats. (Report by J. O. Rowell and det. by W. G. Evans, Office of State Entomologist).

Middlesex County, Nottoway County, Eastern Shore--December 5, 1958, attacking early barley and oats severely in the lower end of Middlesex County (report by Edwards); heavy on oats and barley on a Nottoway County farm (report by Rowell) and were heavy on small grains on the Eastern Shore during the last week of November (report by R. N. Hofmaster). [All records in the Office of State Entomologist.]

Mathews County--November 29, 1966--several barley and oat fields badly infested; farmers are considering spraying for control this week (Office of State Entomologist--report by Dinwiddie).

"Five adults collected in oatfield in Nansemond County April 30, 1968. Det. by L. M. Russell. This is first report of species in county." (W. A. Allen, U.S. Dept. Agr. Coop. Econ. Ins. Rpt. 18(26):573, 1968).

## MARYLAND

"On June 7, 1884, Mr. Albert Koebele found this species infesting wheat plants at Cabin John Bridge, situated in Maryland a few miles above Washington . . . " (Webster and Phillips, p. 15).

"Damaged young orchard grass seedlings at Clarksville, Howard County." (U.S. Dept. Agr. Coop. Econ. Ins. Rpt. 8(47):953, 1958).

Killed two-thirds of an oat field in Worcester County, November 13, 1959. (U.S. Dept. Agr. Coop. Econ. Ins. Rpt. 9(48):1017, 1959).

Beltsville--October 13, 1961, alatae in yellow water pans among gladioli. (Coll. by H. E. Wave and det. by L. M. Russell).

## DELAWARE

There are no records of the occurrence of the greenbug.

## DISTRICT OF COLUMBIA

"There was an outbreak of Toxoptera in the bluegrass lawns north of the buildings of the Department of Agriculture at Washington, D.C., in July, 1907. The infested area . . . was apparently confined to the space of about an acre, where it was excessively abundant; outside of this area practically no Toxoptera could be found." In 1910 it was again injuriously abundant in this same area and was quite numerous on bluegrass about the Washington Monument some 4 blocks away. (Webster and Phillips, pp. 37-38).

Washington, D.C.--July 18, 1906, on *Poa pratensis* (T. Pergande -- one slide in USNM); April 4, 1908, no food plant given, dead when found (C. N. Ainslee -- one slide of female with one egg and young in USNM); January 1932, food plant not given (coll. by F. M. Wadley -- one slide in Cornell Univ. Collect.). June 1, 1962, on crabgrass, *Digitaria sanguinalis*, a few alatae, apterae, and nymphs (coll. and det. by M. D. Leonard). Two alatae in a yellow water pan on the roof of an apartment house (10 stories high), 2 alatae during June 1962 (Leonard, 1964b) and 1 alata in the pan in July 1963 (Leonard, 1965).

## PENNSYLVANIA

York--September 13, 1909, no plant given, 1 aptera, 5 nymphs on a slide in USNM. (Coll. by V. L. Wildermuth).

"A field of timothy near Carlisle, Pa., was found by J. S. Pinckney on May 9 to be heavily infested with Toxoptera graminum," reports Chas. C. Hill. "At this time Mr. Pinckney observed that the field was already showing all the characteristic 'spots' of this type of infestation, scattered throughout the field and varying in size from a few feet in diameter to 20 yards. The field has now been entirely ruined from this cause and will be plowed up. It is unusual to find serious infestation from this species of aphid in this section of the country, and F. M. Wadley believes that it has never before been reported as working on timothy in injurious abundance. These aphids were plentiful in near-by oat and timothy fields but were not doing any outstanding injury to them. The determination of the species was verified by F. M. Wadley." (Mo. Letter, U.S. Bur. Ent., No. 218 for May, dated June 1932).

Springbrook (near Moussic between Scranton and Pittston)--1 alata, June 13, 1945. (Coll. by R. I. Sailer -- 1 slide in USNM).

Centre Hall--in black light traps and in yellow trays alatae as follows: May 11 and 27, June 2, 22 and 29, 1958; July 2 and 6, August 24 and 31, 1960. One to 3 alatae collected on each of the above dates. (Report from J. O. Pepper). Dr. B. F. Coon (1968), Pennsylvania State University, operated two black light traps from May 1 through November 26, 1960. In these a total of 213 alate greenbugs were taken nearly all of which (194) were in June. The other dates of collections were May - 3 alatae; July - 5 alatae; August - 1 alata; and October - 1 alata.

## NEW JERSEY

No locality given (1961)--October 6 - 1 alata; October 9 - 1 alata; and November 6 - 2 alatae collected by sweeping, no host plant given. (Coll. by R. S. Filmer and det. by J. O. Pepper).

Cranbury--June 2, 1960, on timothy grass. (Coll. by H. E. Wave and det. by C. F. Smith). See Leonard 1964a.

## NEW YORK

Sodus--August 16, 1923, infesting buckwheat. (Report by C. R. Crosby to IPS).

Ithaca--October 1-3, 1939, 3 alatae in trap. (Coll. by W. F. Rochow and det. J. O. Pepper). North Lansing--June 15 to August 7, 1964, 2 alatae; June 9 to August 16, 1965, 10 alatae in sticky traps. (Coll. by F. W. Zettler and det. by J. O. Pepper). See Leonard 1968.

## CONNECTICUT

Short Beach--May 20, 1953, alatae on the wing. This is the first record of the greenbug for Connecticut. (Report by J. B. Kring to SRS).

## RHODE ISLAND

I can find no record of the occurrence of the greenbug in this State.

## MASSACHUSETTS

". . . near Boston, where it seems to have been found by Mr. Paul Hayhurst in September, 1908 . . ." (Webster and Phillips, p. 19). I have been unable to further substantiate this collection (M.D.L.).

## NEW HAMPSHIRE

Dr. J. C. Conklin, Chairman, Department of Entomology, University of New Hampshire, wrote me in April 1968 that his files contain no record of the greenbug in New Hampshire.

## MAINE

Presque Isle--6 collections of alatae in traps during August 1941 (coll. and det. by W. A. Shands and G. W. Simpson); alatae taken in traps from June 1953-June 1963 (coll. by Shands, Simpson and H. E. Wave).

No specific locality--was present in small numbers on oats. (Report by L. W. Boulanger and R. W. Paulson, summary 1955 in SRS).

On April 10, 1968, W. A. Shands wrote me as follows: "Over the years we recorded Schizaphis (Toxoptera) graminum occasionally on oats but usually in trace numbers only. Once in awhile it was fairly common on perennial grasses (mostly witchgrass) growing in the stands of oats, however here again it was never really abundant. From its sporadic occurrence, one might think the initial infestations were windborne--coming from outside the Aroostook area."

## NEW BRUNSWICK, CANADA

"The only records I have were collections taken in traps at Woodstock August 5, 1949, Point Escuminac August 29, 1951 and Alma August 6, 1951." (M. E. MacGillivray, 1955). Fredericton--1958, on Agropyron repens (det. by MacGillivray).

## NOVA SCOTIA

"I cannot give you definite records of S. graminum from Nova Scotia but I recall that they occurred in trap catches that I examined between 1945 and 1950." (MacGillivray in litt.).

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It is believed the following information is of pertinent interest here:

Dr. G. B. Orlob (1961) has described from New Brunswick, Canada, Schizaphis graminum phlei new subspecies. The technical description and accompanying notes are on pages 498-500. His initial statement is as follows:

"During May, a Schizaphis-like aphid appeared on Phleum pratense L. in the Fredericton area. Feeding habit, damage inflicted on the host, as well as morphological characters suggested that this aphid was nothing but the well-known greenbug, Schizaphis graminum (Rondani). Other features, such as a yellow color and the presence of exclusively apterous forms early in the season, were not considered typical for *S. graminum* s. str. Soon it became apparent that the aphid from timothy differed also from the greenbug in its host range and the production of sexuales. Because of these characters the aphid is described as a new subspecies of *S. graminum*."

The type material (an apterous viviparous female) is dated June 1, 1960, Fredericton, New Brunswick, on *Phleum pratense*.

On page 500 under "Comments" are most interesting notes on several *Schizaphis graminum*-like aphids which have been reported from the USSR and several other European countries.

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